

3-17-06



Attorney Docket No. 43299.830001.002  
Express Mail Label No. EV269464321US

AFS  
JFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Reichwein, Ernst

Serial No. 09/977,182

Filed: October 12, 2001

For: INTERACTIVE SYMPTOMATIC  
RECORDING SYSTEM AND METHOD  
UTILIZING SYMPTOMATIC MEMORY

Examiner: NGUYEN, CUONG H

Art Unit: 3661

CERTIFICATE OF MAILING BY EXPRESS MAIL

Mail Stop: APPEAL BRIEF -- PATENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450


Sir:

The undersigned hereby certifies that the enclosed

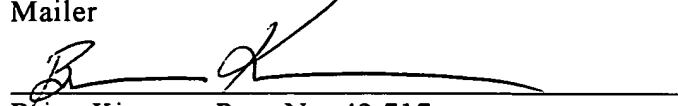
1. Appeal Brief to September 8, 2005 Decision;
2. Appendix A;
3. Petition for a Two-Month Extension of Time;
4. Authorized to Charge \$475.00 to Deposit Account (\$250.00 for Appeal Fee and \$225.00 for Two-Month Extension);
5. Certificate of Mailing by Express Mail; and
6. Return Card,

relating to the above application, were deposited as "Express Mail," Mailing Label No. EV269464321US with the United States Postal Service, addressed to Commissioner for Patents, Mail Stop: Amendment, P.O. Box 1450, Alexandria, VA 22313, on this March 15, 2006.

March 15, 2006

  
\_\_\_\_\_  
Mailer

March 15, 2006

  
\_\_\_\_\_  
Brian Kinnear, Reg. No. 43,717  
HOLLAND & HART LLP  
555-17th Street, Suite 3200  
Denver, Colorado 80202-3979  
Telephone: (303) 295-8170  
Facsimile: (303) 295-8261



43299.830001.002  
Serial No. 09/977,182  
Express Mail No. EV269464321US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	)	
	)	
REICHWEIN et al	)	
	)	Group Art Unit: 3661
Serial No. 09/977,182	)	
	)	Examiner: Nguyen, Cuong H.
Filed: October 12, 2001	)	
	)	
For: INTERACTIVE	)	
SYMPTOMATIC RECORDING	)	
SYSTEM AND METHOD	)	
UTILIZING SYMPTOMATIC	)	
MEMORY	)	

**APPEAL BRIEF**

Mail Stop: APPEAL BRIEF - PATENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is an appeal from the decision of the Examiner mailed on September 8, 2005, finally rejecting claims 1-20 of the above-identified patent application.

**REAL PARTY IN INTEREST**

The real party in interest in this appeal is the assignee Reichwein – White Enterprises, Inc.

03/17/2006 YPOLITE1 00000060 082623 09977182

01 FC:2252 225.00 DA

03/17/2006 YPOLITE1 00000060 082623 09977182

02 FC:2402 250.00 DA

RELATED APPEALS AND INTERFERENCES

Neither Appellants nor Appellants' legal representative know of appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the present appeal.

STATUS OF CLAIMS

Claims 1-20 remain in this application.

This appeal is taken from the rejection of claims 1-20.

No claims are allowed.

STATUS OF AMENDMENTS

An Amendment was filed on June 24, 2005, in response to a May 4, 2005 Office Action. The Examiner entered and considered the Amendment, but finally rejected claims 1-20 in a September 8, 2005 Final Office Action.

### SUMMARY OF THE INVENTION

The present invention relates to an interactive communication system that enables a non-technical, lay person to communicate operating conditions and symptoms of faulty equipment. In particular, the present invention provides a device and system to store exact operating conditions of, for example, a car, when the driver of the car experiences an abnormality. The experience of an abnormality occurs through one of the five sense, typically hearing, feeling, smell, or seeing and not so typically taste.

While the present invention will be described in relation to use with a vehicle, such as, for example, an automotive, one of ordinary skill in the art would recognize the present invention may be used with other operable equipment. As shown in figure 35, for example, an automobile 100 contains a computer chip 101, a sensor array 102, non-volatile memory 103, a first network 104, and at least a first manually operable button 106. Actuation of manually operable button 106 causes computer chip 101 to read the state of sensor array 102 and store the information in non-volatile memory 103.

Sensor array 102 comprises one to a large number of individual sensors. The sensors monitor the instantaneous operating parameters of automobile 100. For example, sensor array 102 may have one or more sensors to monitor the instantaneous tire pressure, automobile speed, RPMs, engine temperature, engine oil pressure, and the like.

Thus, when the operator of automobile 100 experiences or senses an abnormality in the operation of automobile 100, such as, for example, a vibration in the steering column, the operator manually actuates button 106 which causes a snap shot of the sensed operating parameters, as sensed by array 102, to be stored in memory 103. When operator of automobile 100 drops the automobile

43299.830001.002  
Serial No. 09/977,182  
Express Mail No. EV269464321US

with a mechanic because of the sensed abnormality, the mechanic can duplicate the operating conditions to analyze the problem.

### ISSUES

The issues present by the present appeal are:

- (1) Are claims 1-13 and 15-20 unpatentable under 35 U.S.C. § 103(a) as being obvious over United States Patent Application Publication 2002/0016655 (“Joao”) in view of United States Patent 5,491,631 (“Shirane et al.”)?
- (2) Is claim 15 unpatentable under 35 U.S.C. § 103(a) as being obvious over Joao in view of Shirane et al. in further view of United States Patent 5,875,430 (“Koether”)?

### GROUPING OF CLAIMS

The appellant submits that the claims on appeal stand or fall together.

SUMMARY OF THE EXAMINER'S FINAL REJECTION

The Examiner finally rejected claims 1-20 in a September 8, 2005 Final Office Action.

In the June 1, 2005 Final Office Action, the Examiner rejected claim 1-13 and 15-20 under 35 U.S.C. § 103(a) as being unpatentable and obvious over Joao in view of Shirane. In particular, the Examiner asserted that Joao disclosed a sensor array associated with the vehicle or equipment that senses a plurality of vehicle operating conditions and a memory attached to the sensor array. According to the Examiner, Joao discloses a first control means responsive to an action by the lay person (driver or operator) that causes the outputs of the sensors to be stored in the memory. Furthermore, the Examiner asserts that Joao discloses a second control means to allow reading the operating conditions stored in the memory. The Examiner admits Joao does not disclose using sensors to get vehicle data, but relies in Shirane et al. for the disclosure of outputting sensor information.

The Examiner rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable and obvious over Joao in view of Shirane in further view of Koether. In particular, the Examiner admits that neither Joao nor Shirane disclose capturing a signature of the owner/operator for repair authorization. The Examiner believes capturing such as signature would have been obvious in view of Koether.

SUMMARY OF THE REFERENCES CITED BY THE EXAMINER

United States Published Patent Application 2002/0016655 – Joao

Joao is directed to a method and apparatus for processing vehicle information. In particular, Joao relates to a “comprehensive vehicle maintenance processing system which can manage vehicle information and/or records, vehicle maintenance information and/or records, vehicle owner and/or operator information and/or records, vehicle owner and/or operator information and/or records, vehicle service information and/or records, vehicle dealer information and/or records, service provider information and/or records, vehicle parts provider information and/or records, vehicle manufacturer information and/or records, and/or vehicle service payer information and/or records.” (Joao at paragraph [0010]). Moreover, Joao facilitates improved vehicle maintenance via record-keeping, vehicle information collection, diagnosis and service. (*Id.* at paragraph [0011]).

Referring specifically to the detailed description and figures, Joao at figure 1 discloses a system 100 that comprises a number of separate computers 10-95. (*Id.* at paragraphs [0151] to [0163]). As further explained, each separate computer manages a particular type of information and can transmit to or receive from other computers additional information. One methodology of using the device of Joao is represented by figures 12A-C. In operation, a user access the central processing computer 10 via the user computer 20 and enters data and/or information regarding the user and/or the vehicle in question. (*Id.* at paragraph [0282]). The central computer 10 will then access appropriate databases to collect the relevant information about, for example, the vehicle. For example, the central computer 10 may access a vehicle maintenance report.



One of the relevant information databases accessed by the central computer 10 may be the vehicle computer 30 that may contain a database of diagnostic information. The central computer would use this information to perform a system diagnostic to determine potential problem. (*Id.* at paragraph [0287]).

United States Patent 5,491,631 – Shirane et al.

Shirane et al. is directed to an apparatus and method for detecting fault codes in a vehicle. In particular, most conventional vehicles have a engine temperature sensor. The temperature sensor from time to time may indicate engine temperature exceeds a predefined limit. When this limit is exceeded, the sensor may send a fault indication to a storage facilitate such that one examination by a mechanic, the mechanic will be capable of determining at some point the engine temperature exceeded its setting. However, the fault detection does not store information regarding when, how, or what other operating conditions existed, but simply an indication that the temperature was exceed at some point in time previous to the mechanics examination. The point in time may be several days, weeks, or months prior to the examination.

United States Patent 5,875,430 - Koether

Koether provides an eccentric ball for a game. In particular, Ichioaka arranges a through hole 4 through an eccentric shaped ball body 1. The through hole is plugged with a device 6 as can be seen in Figures 1-4. The body 1 of Ichioaka is shaped such that the ball will provide an eccentric or irregular rolling/travel pattern.

ARGUMENT

Claims 1-20 remain pending in this application.

In a September 8, 2005 Final Office Action, the Examiner rejected claims 1-13 and 15-20 under 35 U.S.C. § 103(a) as being unpatentable and obvious over United States Published Patent Application Publication Number 2002/0016655 A1 ("Joao") in view of United States Patent 5,491,631 ("Shirane et al."). The Examiner rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable and obvious over Joao in view Shirane et al. in further view of United States Patent 5,875,430 ("Koether"). The applicants respectfully traverse the rejections.

Regarding the rejection of claims 1-13 and 15-20 under 35 U.S.C. § 103(a) as being unpatentable and obvious over Joao in view of Shirane et al. The applicants respectfully traverse the rejection. In particular, claim 1 relates to "an interactive communication system enabling a lay person to record and communicate operating conditions and symptoms of equipment when an abnormal mode of operation is experienced to skilled service personnel, to enable said service personnel to thereafter perform service on said equipment in accordance with said operating symptoms to diagnosis and correct said abnormal mode" and recites a combination of elements including, for example, "actuation of said first control means by said lay person causing said plurality of outputs of said sensor array to be stored in said memory means recording operating conditions associated with said equipment at a time when said lay person actuates said first control means in response to said lay person experiencing an abnormal mode of operation of said equipment," which is not shown, disclosed, or even suggested by Joao. In other words, the present invention provides the ability for a layperson, such as the driver of a car, to notice a particular problem with the equipment, such as vibration during a right turn. When the vibration or

other abnormal condition is noticed, the driver actuates the system that then takes a snap shot of the car operating conditions based on the plurality of sensors. The information could include features, such as, for example, speed, turn radius, tire pressure, engine rpms, engine temperature, hydraulic pressure, or the like. Joao provides no such mechanism for taking a snap shot of operating conditions when an equipment abnormality or problem is identified. In fact, Joao is completely silent regarding operating conditions during abnormal operation and a mechanism to record the symptoms associated with the abnormal operation condition. Thus, for at least this reason, amended claim 1 is patentably distinct from Joao.

Moreover, Shirane et al. does not cure the defect of Joao noted above. In particular, Shirane et al. provides that vehicles contain numerous electronic sensor. The sensors frequently have setting indicating when a predefined condition has been tripped. For example, an engine temperature sensor may trip when engine temperature exceeds a predefined temperature. Shirane et al. provides a method and apparatus to detect that a sensor has tripped, but has no mechanism regarding storing the operating conditions of the vehicle when the use of the vehicle experiences an abnormality. In other words, an abnormal noise or vibration during operation of the care may not cause a coinciding trip of an electronic sensor, and Shirane et al. provides no mechanism for capturing this fault. Conversely, the present invention provides “actuation of said first control means by said lay person causing said plurality of outputs of said sensor array to be stored in said memory means recording operating conditions associated with said equipment at a time when said lay person actuates said first control means in response to said lay person experiencing an abnormal mode of operation of said equipment.” Thus, the actual operating conditions of the vehicle that existed when the abnormal operating condition occurred is stored in memory such that the mechanic can duplicate the operating conditions when the abnormal

condition occurred. Thus, similar to Joao above, Shirane et al. is silent regarding capturing operating parameters of the vehicle by “actuation of said first control means by said lay person causing said plurality of outputs of said sensor array to be stored in said memory means recording operating conditions associated with said equipment at a time when said lay person actuates said first control means in response to said lay person experiencing an abnormal mode of operation of said equipment.” Thus, for at least this reason, claim 1 is not obvious in view of Joao and Shirane et al. either alone or in combination thereof.

Furthermore, while it could be used in conjunction with diagnostic tools, the present invention does not provide any diagnostic processing. Conversely, both Joao and Shirane et al. provide diagnostic tools. In particular, the present invention provides for recording operating conditions when a symptom of a problem is noted. The operating conditions are stored in a memory and associated with the abnormal symptom of operation noted by the lay person. A service provider can access the memory to download the symptoms as well as the operating conditions of the equipment when the symptom was noted, discovered, etc. Joao does not record a snapshot of operating conditions as the present invention does, but rather provides information regarding the vehicle maintenance information, vehicle manufacturer information, and vehicle problems. Notably, Joao and Shirane et al. are silent about recording, sensing, and/or storing information about the vehicle operating conditions when the vehicle problems are noticed. In fact, and at most, Joao only discusses recording the “symptoms of a problem” at step 204 of Figure 12A. At this step, the user (or lay person) is instructed to describe the problem. There is no suggestion of providing information relating to actual operating conditions as stored by a memory when the problem was noted. Similarly, Shirane et al. largely relates to fault detection and the like. Shirane et al. at column 8, line 60 et seq., column 11, line 40, to column 13, line 21 (discussing fault codes), and the like. Thus,

for at least this additional reason, claim 1 is not obvious in view of Joao and Shirane et al. either alone or in any reasonable combination thereof.

The Examiner relies on Joao steps 205 and 206 of a flowchart for the disclosure of a sensory array to record equipment operating conditions as well as for an actuator to record a snapshot of operating conditions when a user experiences an abnormality. However, the applicants respectfully submit the Examiner is reading much more into the reference than the reference actually discloses. In particular, step 205 of Joao specifically relates to receiving the information transmitted from step 204. Step 204 is completely silent regarding capturing the actual operating conditions of the equipment during abnormal operating but rather relates to a lay person inputting the symptoms when at the service station, typically long after the abnormal operating condition is experienced. Moreover, while Joao discloses numerous databases, a through reading of Joao by the applicants has failed to reveal any mention of a sensor array “providing a plurality of outputs indicative of a plurality of operating conditions.”

Moreover, the Examiner's reliance of Shirane et al. is misplaced. In particular, the present invention recites a combination of elements including, for example, “actuation of said first control means by said lay person causing said plurality of outputs of said sensor array to be stored in said memory means recording operating conditions associated with said equipment at a time when said lay person actuates said first control means in response to said lay person experiencing an abnormal mode of operation of said equipment,” which is not disclosed or suggested by Shirane et al. The Examiner relies on the statement in the field of the invention stating:

The present invention is related to a fault diagnostic system for vehicles which is adapted to communicate with an electronic control unit carried on a vehicle such as a car and provided with a self-diagnostic function of detecting and recording faults of various

sensors and actuators, and based on the communication result, finds the failures of the electronic control unit and the peripheral equipment connected thereto.

By suggesting the field of the invention suggests or discloses actuating a system to record vehicle operating parameters when an abnormal condition is sensed by the operator, it is respectfully submitted the Examiner is reading more into the reference because the passage does not suggest any operator action to capture vehicle parameters during abnormal operating conditions, but simply detecting and recording a sensor trip.

Thus, for at least these additional reasons, the present claim 1 is not obvious in view of Joao and Shirane et al. either alone or in any reasonable combination thereof.

Claims 5, 9, 11, and 15 contain recitations similar to claim 1 and, at least by virtue of the similarity, are not obvious in view of Joao or Shirane et al. either alone or in any reasonable combination thereof. Claims 2-5, 6-8, 10, 12 and 15-20 depend from claims 1, 5, 9, 11, and 15 either directly or indirectly and, at least by virtue of the dependency, are not obvious in view of Joao or Shirane et al. either alone or in any reasonable combination thereof.

The Examiner rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Joao in view of Shirane et al. in further view of Koether. In particular, the Examiner relied on Koether for the disclosure regarding how to capture an authorization signature. While the applicants respectfully submit that Koether is not properly combinable with Joao or Shirane et al., it is respectfully submitted that Koether does not cure the defects of Joao and Shirane et al. noted above. Thus, claim 14 is not obvious in view of Joao, Shirane et al. and Koether either alone or in any reasonable combination thereof.

For at least this reason, Joao, Shirane et al., and Koether do not disclose, suggest or provide for the invention recited in claims 1-20. Reversal of the Examiner's rejection of claim 1-20 is respectfully requested.

Conclusion

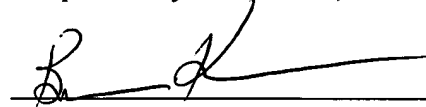
Based on the above, claims 1-20 are not obvious in view of Joao, Shirane et al. and Koether either alone or in any reasonable combination thereof, either alone or in any reasonable combination thereof.

Request:

Reversal of the Examiner's final rejection of claims 1-2 under 35 U.S.C. § 103(a) is respectfully requested for the above-stated reasons.

Signed this 15 day of March 2006.

Respectfully submitted,



---

Brian Kinnear, Reg. No. 43,717  
ATTORNEY FOR APPLICANT  
HOLLAND & HART LLP  
Post Office Box 8749  
555 17<sup>th</sup> Street, suite 3200  
Denver, Colorado 80201  
(303) 295-8170

APPENDIX A

Claims 1-20 involved in this Appeal read as follows:

1. An interactive communication system enabling a lay person to record and communicate operating conditions and symptoms of equipment when an abnormal mode of operation is experienced to skilled service personnel, to enable said service personnel to thereafter perform service on said equipment in accordance with said operating symptoms to diagnosis and correct said abnormal mode, comprising:

a sensor array associated with said equipment;

said sensor array providing a plurality of outputs indicative of a plurality of operating conditions of said equipment that occur as said lay person operates said equipment;

memory means associated with said equipment;

first control means responsive to an action by said lay person;

actuation of said first control means by said lay person operating to cause said plurality of outputs of said sensor array to be stored in said memory means associated with said equipment when said lay person actuates said first control means in response to said lay person experiencing an abnormal mode of operation of said equipment;

a query generator at a service site for generating a symptom-related query;

a presentation device for receiving said symptom-related query and for presenting said symptom-related query to said lay person;

second control means responsive to an action by said lay person in response to said symptom-related query; and

said second control means being operable to provide a content of said memory means to said service site for analysis by said service personnel.



2. The interactive communication system of claim 1 wherein said service site and said equipment are located at geographically remote sites and wherein the Internet is utilized to send said symptom-related query and said content of said memory means.

3. The interactive communication system of claim 1 wherein said equipment is an automobile.

4. The interactive communication system of claim 3 wherein said first control means is associated with a portion of said automobile that is utilized as said automobile is operated.

5. A method enabling a lay person at an equipment site to record and communicate operating conditions of equipment during an abnormal mode of operation to skilled service personnel at a service site to thereby enable said service personnel to thereafter perform service on said equipment based upon said operating symptoms to diagnosis and correct the abnormal mode of operation, comprising the steps of:

providing a sensor array on said equipment;

said sensor array providing a plurality of outputs that are indicative of a plurality of operating conditions of said equipment that occur as said lay person operates said equipment;

providing memory means on said equipment;

providing first control means on said equipment responsive to an action by said lay person as said lay person operates said equipment;

actuation of said first control means by said lay person causing said plurality of outputs of said sensor array to be stored in said memory means recording operating conditions associated with said equipment at a time when

said lay person actuates said first control means in response to said lay person experiencing an abnormal mode of operation of said equipment;

providing a query generator at a service site for generating a symptom-related query to said equipment site;

providing a presentation device at said equipment site for receiving said symptom-related query and for presenting said symptom-related query to said lay person;

providing second control means responsive to actuation by said lay person in response to said symptom-related query; and

providing a content of said memory means to said service site for analysis by said service personnel in response to actuation of said second control means.

6. The method of claim 5 wherein said service site and said equipment site are geographically spaced, and wherein the Internet is utilized to send said symptom-related query to said equipment site and to send said content of said memory means to said service site.

7. The method of claim 5 wherein said equipment is an automobile.

8. The method of claim 7 wherein said first control means is associated with a portion of said automobile that is utilized by said lay person as said automobile is operated by said lay person.

9. An Internet-based system for providing interactive communication between a plurality of service sites and a plurality of equipment sites at which a plurality of equipment needing service due to an abnormal operating mode is operated by an equipment operator comprising:

a sensor array, memory and a manual actuator at each of said plurality of equipment;

actuation of said actuator by an equipment operator when an abnormal mode of operation of a given equipment at a corresponding equipment site is experienced by said equipment operator causing equipment operating conditions sensed by said sensor array be to stored in said memory of said given equipment;

first means at said corresponding equipment site for causing a request for service to be sent via the Internet from said corresponding equipment site to a selected service site;

query means at said selected service site responsive to said request for service for sending a symptom query via the Internet from said selected service site to said corresponding equipment site;

second means at said corresponding equipment site responsive to said symptom query for sending a content of said memory of said given equipment via the Internet from said corresponding equipment site to said selected service site; and

a compiler at said given service site responsive to said content of said memory of said given equipment for providing a service plan based upon said content of said memory of said given equipment.

10. The system of claim 9 wherein said plurality of service sites are a plurality of automobile service sites, and wherein said plurality of equipment are a plurality of automobiles.

11. A method allowing a lay person to submit operating conditions and symptoms relating to a malfunction of equipment, and allowing a service provider to generate a chart of operating conditions and symptoms for use in servicing said equipment; comprising the steps of:

providing a sensor array having a plurality of outputs corresponding to a plurality of operating conditions of said equipment;

providing memory on said equipment;

providing an actuator on said equipment;

instantaneous operation of said actuator causing instantaneous values of said plurality of outputs corresponding to said plurality of operating conditions of said sensor array to be stored in said memory;

initiating a request for service to said service provider by said lay person, said request indicative of the symptoms relating to said malfunction of said equipment;

in response to said request, querying said lay person for operating conditions of said equipment by said service provider;

in response to said query, providing a content of said memory to said service provider by said lay person;

in response to receiving said content of said memory, compiling said content of said memory at said service provider; and

outputting a chart of operating conditions and symptoms of said equipment based upon said compilation, said chart for use by said service provider, and said chart having sufficient information so said lay person does not need to have direct communication with said service provider when leaving said equipment with said service provider.

12. The method of claim 11 wherein said instantaneous operation of said actuator is based upon operation of said equipment as sensed by the five human senses of said lay persons and as said lay person operates said equipment.

13. The method of claim 12 including the step of:

instructing said lay person how to leave said equipment with said service provider, and how and when to claim said equipment following service of said equipment by said service provider.

14. The method of 13 including the step of:  
capturing a signature of said lay person to provide authorization to said service provider.

15. An equipment operating condition recording device to record operating conditions during abnormal equipment operations sensed by a lay person to allow a service provider to reproduce operating conditions substantially identical to operating conditions during an abnormality sensed a lay person, comprising:

at least one actuator, the at least one actuator is responsive to an action by a lay person;

at least one sensor to monitor at least one operating condition of the equipment and to provide at least one output indicative of the at least one operating condition being sensed; and

at least one memory for recording the at least one output,

such that when the at least one actuator is actuated by the lay person during when the lay person senses the abnormality, the at least one memory records the operating condition of the equipment during the abnormality.

16. The device of claim 15, wherein the recorded operating condition is the instantaneous operating condition.

17. The device of claim 15, wherein the at least one sensor is at least two sensors.

18. The device of claim 15, further comprising:  
a read out module capable of downloading the recorded operating conditions to a service site such that the service site can duplicate the operating conditions that prompted the lay person to actuate the at least one actuator.

19. The device of claim 18, wherein the read out module downloads operating conditions to the service site using a protocol, the protocol comprises at least one of wireless protocols, internet protocols, radio frequency protocols, and telephony protocols.

20. A device for recording operating conditions of a piece of equipment when a lay person senses an abnormality, comprising:  
means for actuating at least one sensor, the means for actuating responsive to an action of the lay person;  
means for sensing the operating conditions of the piece of equipment during the abnormality;  
means for storing the sensed operating conditions during the abnormality;  
and  
means for downloading the stored operating conditions to a service site, whereby the operating conditions of the piece of equipment when the lay person sensed the abnormality can be substantially duplicated.